Program V Earned Value Management Predictive Analysis

Presented By:

Name
CMO Name

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Executive Summary

EASS Table 1 – Executive Summary

Basic Contract Status			
Summary CPA Indicator	R	Performance % complete	63%
Period of Performance	106 months	Duration % complete	47%
Total Allocated Budget	$1,803,334	DCMA IEAC	$2,187,332
Contract Budget Base	$1,803,334	KTR EAC	$2,143,227
Early Warning Indiators	**CV**	**SV**	**VAC***
Cumulative Trend	R↓	G↓	R →
$ Variance favorable/ (unfavorable)	($255)	($35)	($374)
% Variance underrun/ (overrun)	-22%	-3%	-21%
Index	CPI = 0.82	SPI = 0.97	TCPI (EAC) = 0.84
Estimated Completion Date	Baseline 17 Aug 2016	Contractor 17 Aug 2016	DCMA ***

CV trend Red, worsening

SV trend Green, worsening

VAC trend Red, no change

- DCMA ECD not currently available, independent Critical Path analysis cannot be validated at this time.

All $ in K (000)
* as compared to KTR ML EAC

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Synopsis / Watch Items

EASS Table 2 – Watch

WBS	NAME	SV	SPI Cur/Cum	TREND	CV	CPI Cur/Cum	TREND	% Comp	% Spent	BAC	KTR EAC	DCMA IEAC
COM1	Network COM	(309)	0.89 / 1.00		(45,901)	0.79 / 0.68		86.%	125.%	116,254	164,597	188,552
339210	IMU	(894)	2.00 / 0.95		(20,769)	0.30 / 0.48		92.%	193.%	20,603	41,634	44,969
33A200	Telemetry Track	(6,493)	3.75 / 0.87		(19,455)	1.06 / 0.70		81.%	116.%	55,937	75,535	93,076
326000	AI&T	(3,096)	0.40 / 0.51		(4,635)	0.30 / 0.41		32.%	77.%	10,126	10,496	46,129
322000	SV AI&T	(984)	4.4 0/ 0.75		610	2.54 / 1.26		17.%	14.%	17,133	12,466	17,133

SubX –
Software scripts for mission data more complex than expected
Flight material, atomic clocks, transmitters, switches, isolators

SubY –
Lot acceptance testing for parts and printed wiring boards

SubA and SubB - Not at lowest level WBs, but rolled up to subcontractor effort for inclusion on Watch Item list

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Baseline Quality

Baseline Revisions Chart

EOP date	Mar-12	Apr-12	May-12	Jun-12	Jul-12	Aug-12
2/26/2012	17,936	16,672	17,736	15,304	23,056	14,598
3/25/2012		23,659	25,321	19,685	34,495	18,047
4/29/2012			26,267	20,958	34,897	18,309
5/27/2012				21,994	31,807	16,378
6/24/2012					33,315	15,668
7/29/2012						16,022
8/26/2012						
Min →	16,580	15,508	14,644	14,255	21,583	14,598
Max→	17,936	23,659	26,267	21,994	34,897	18,309
%change	8%	53%	79%	54%	62%	25%
6 mon avrg	5%	14%	27%	34%	43%	47%

Baseline Revisions - **Tripped**

- Greater than 5% change in the near term plan indicates baseline fluctuation
- Not stable enough for meaningful performance measurement
- Possibly “planning” to actuals

TAB $1,803,335

Original Contract Cost $1,394,820

Contract Modifications **29%**

Indicates possible scope creep
Requirements not well defined at the time of contract award
Poor contracting practices

Baseline Indicator – **Not tripped**

- IBR was held within 180 days of contract award
- Risks identified were either accepted, added as actions, or mitigated
- All scope included in the baseline

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EVM System Status

EVM system is approved at the corporate level and considered Green

- **May 2011 Implementation Review (IR) occurred at SubL Company**
- **Nov 2011 IR result – Contracting Officer approved**
- **Level II CAR from IR currently being reviewed by DCMA for closure**

No Over Target Budget or Over Target Schedule currently exists

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Performance Execution to Date – Cost Analysis

EASS Table 3 – Cost Drivers (K$)

WBS	NAME	SV	SPI cur/cum	TREND	CV	CPI cur/cum	TREND	%COMP	% SPENT	BAC	KTR EAC	DCMA IEAC
344100	Peculiar Suppor	(582)	1.29/0.97	↑	(32,129)	0.28/0.40		94.%	236.%	22,711	56,400	58,341
345100	Navigation Data	(2,069)	0.75/0.93	–	(23,488)	0.08/0.55	–	82.%	149.%	34,841	60,729	71,133
339210	IMU S	(894)	2.00/0.95	–	(20,769)	0.30/0.48	–	92.%	193.%	20,603	41,634	44,969
33A200	Telemetry Track	(6,493)	3.75/0.87	–	(19,455)	1.05/0.70	–	81.%	116.%	55,937	75,535	93,076
341120	Task xxx	40	0.36/1.00	↑	(15,496)	-1.39/0.78	↓	59.%	76.%	92,205	115,243	182,545
352200	Task yyy	(263)	1.16/0.99	–	(10,921)	0.60/0.66		91.%	138.%	23,265	34,971	37,567

At program level

CVcum = -$255M (22%) CPI of 0.818 *VAC = -$374M

- **Contract level Cost unfavorable and declining**

At WBS level

- **Cost Drivers - major subcontractors SubX (-$110M** or -53.4%), SubY (-$47M or -47.1%) , and SubD measurement unit subcontract (-$21M or -108.8%) . These three suppliers represent -$178M or 72% of the unfavorable cumulative cost variance on contract**

All $ (000), sorted on CV$
* As compared to KTR ML VAC
** Including other lower level WBS unfavorable CV not included in this chart

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Performance Execution to Date – Schedule Analysis

EASS Table 4 – Schedule Drivers (K$)

WBS	NAME	SV$	SPIcur/cum	Trend	CV$	CPIcur/cum	Trend	% COMP	% SPENT	BAC	EAC	DCMA IEAC
33A200	Telemetry Track	(6,493)	3.75/0.87	↑	(19,455)	1.05/0.69	–	81.%	116.%	55,937	75,535	93,252
339200	Attitude Sensor	(4,612)	0.95/0.87	↓	(746)	1.03/0.97	↓	80.%	82.%	39,346	40,825	51,030
BUSC	Task zzz	(3,496)	0.43/021	–	38	0.68/1.04	↓	8.%	7.%	12,489	12,458	12,489
338400	Power Condition	(3,330)	1.205/0.86	↑	(6,731)	0.72/0.76	↑	80.%	104.%	27,075	32,877	41,095

All $ (000), sorted on SV$

At program level

SVcum = -$35M (-3%) SPI of 0.97

- **Contract level Schedule favorable but declining**

At WBS level

- **33A200 Telemetry Track poor schedule performance is driving the large unfavorable cost performance, unrecoverable**
- **There is no OTS on this effort**

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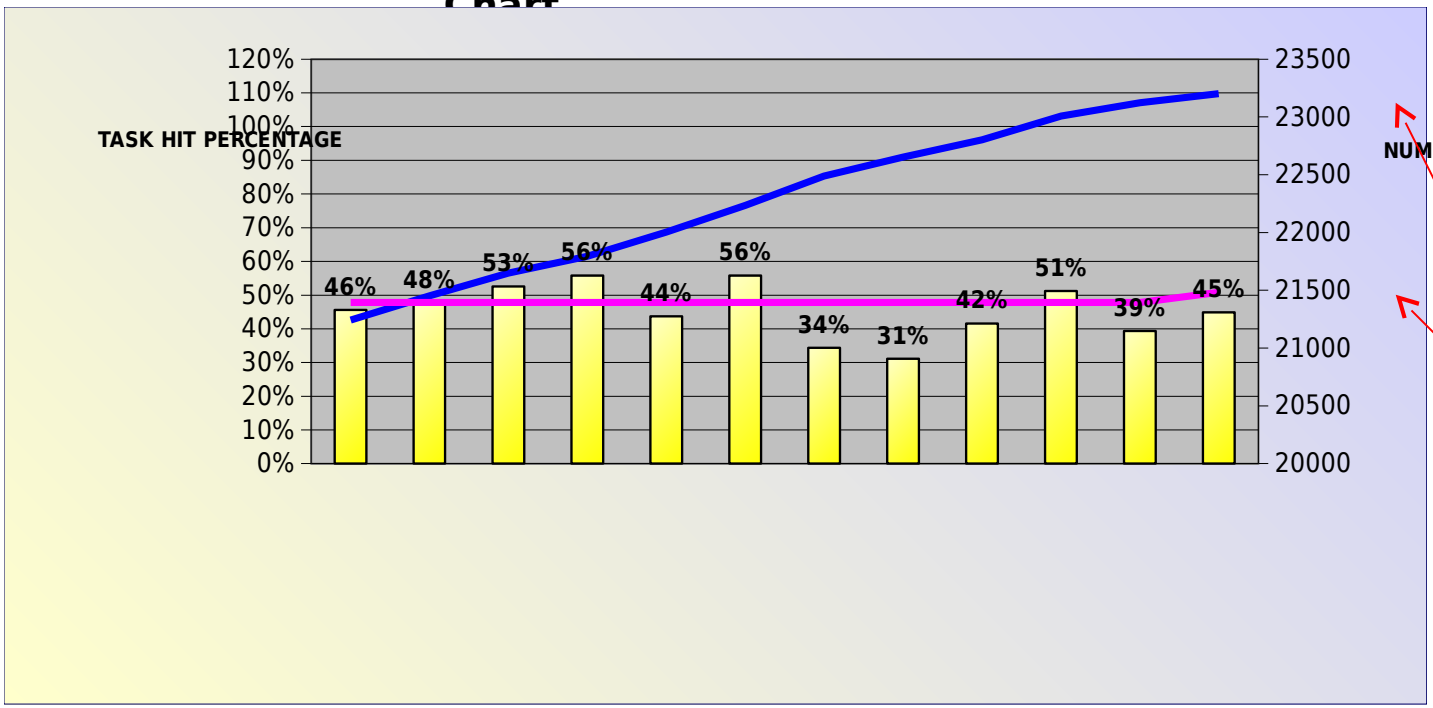
Performance Execution to Date – Baseline Execution Index



- BEI has remained constant over past 4 months at 0.93, expected to continue until first flight is completed
- Hit task percentage hovering around 30s and 40s also consistent with past performance, indicating replan of future work is likely imminent

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3-Month Milestone Trend

IMP – Integrated Master Schedule

EASS Table 5 – 3-Month Milestone Trend

Milestone (IMP EVENTS)	Baseline	Current	Actual	- 1 month	- 2 month	- 3 month
Hardware need date, XXX battery installation	17-Sep-2012	17-Sep-2012	17-Sep-2012	17-Sep-2012	17-Sep-2012	17-Sep-2012
SV01 test sequence development	25-Jul-2012	1-Mar-2013	**	1-Mar-2013	1-Mar-2013	25-Jul-2012
Hardware need date, XXX solar deplymnt & install	3-Sep-2012	28-Mar-2013	**	28-Mar-2013	28-Mar-2013	3-Sep-2012
SV01 ProgramII connectivity available - reference	1-Nov-2012	1-Nov-2012	**	1-Nov-2012	1-Nov-2012	1-Nov-2012
Test procedures and test sequences completed	25-Jul-2013	1-Mar-2013	**	1-Mar-2013	25-Jul-2013	25-Jul-2013
Deliver SV01 to LO at BAFB for shipment	18-Dec-2013	18-Dec-2013	**	18-Dec-2013	18-Dec-2013	18-Dec-2013

- **SV01 test sequence and Hardware need date have been delayed due to late SubX work**
- **Test procedures and sequences will be late due to above late milestone**
- **Current projection dates not independently validated by DCMA due to IMS schedule health errors and lack of critical path validation**

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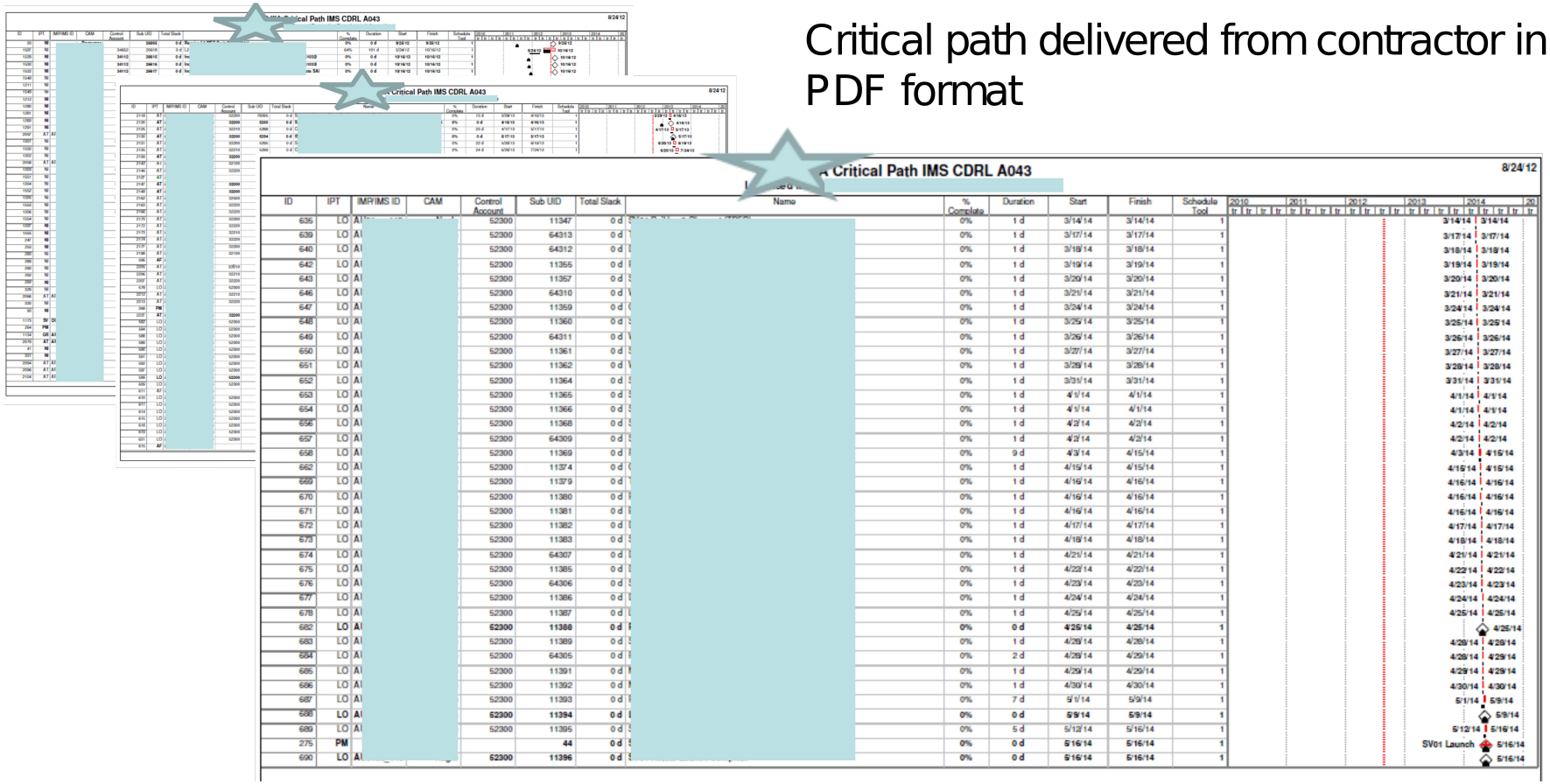
Contractor's Critical Path



Critical path delivered from contractor in PDF format

Because of serious errors identified and other data inconsistences, the critical path cannot be independently verified by DCMA.

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DCMA Independent Critical Path

- **Because of serious errors identified and other data inconsistences, the critical path cannot be independently verified by DCMA**
- **Supporting slides as applicable follow**
  - **DCMA schedule health metric**
  - **IMS analysis of Schedule Margin**
  - **IMS analysis of Incorrect Progress**

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Projected Effort Remaining

TAB $1,833,334 CBB $1,833,334 PMB $1,769,118

To Complete Performance Index

- 0.84 efficiency required to complete at the Contractor's EAC of $2,143,227(K)

Budgeted Cost of Work Remaining

- $662,193
- At current 65% complete considering current cost overrun condition and MR usage until now, MR level of less than 2% will not cover expected cost overrun

DCMA Independent EAC

- $2,187,332(K)
- DCMA VAC -$418,109K
- KTR VAC -374,214K

IEAC considers

- Unrecoverable cost overrun at SubX and SubY subs
- Telemetry poor schedule performance driving cost variance
- Uses all MR available

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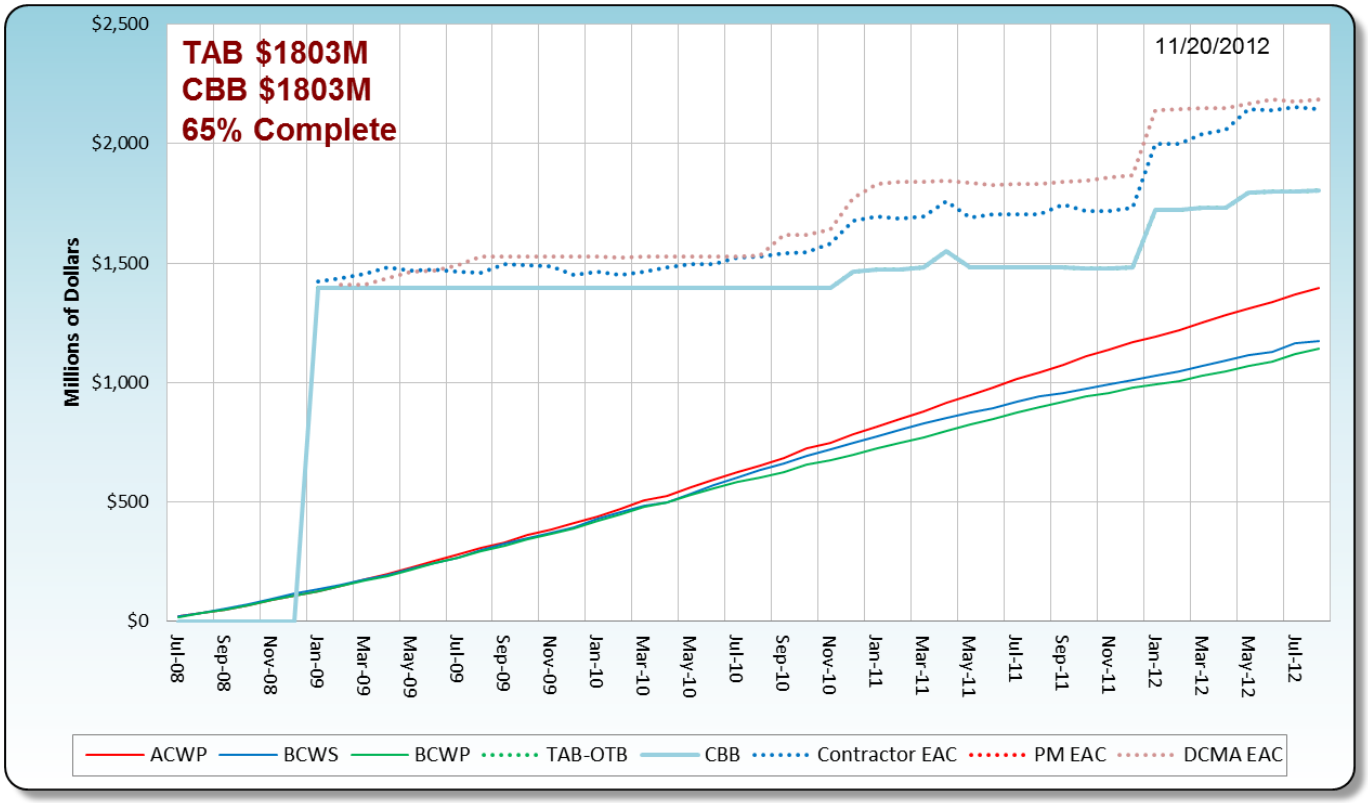
Contract Performance Summary

Contract Performance Chart



- DCMA projected cost variance at completion of XX resulting in IEAC of $2,187,332K
- Estimated completion date of YYY primarily due to late Subcontractor effort

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BACK UP

SUPPORTING SLIDES AS NECESSARY

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Firm Fixed Price - Instructions

- Firm fixed price contract without EVMS requirements “as applies” - BE THE ANALYST
- If FFP subcontracted effort, vendor supplies, material, or other deliverables affect this program, include that impact/risk/concern in the appropriate area, i.e. if Economic Order of Quantity was reduced, costs increased, then discuss the parts cost increase in the cost variance section and include in IEAC if appropriate
- If FFP from other programs or platforms are affecting impacts/risk/concern of this program, include in the appropriate area. i.e. if F-18 flight test requirements are awaiting data results from F-14 program causing delay of next phase of F-18 flight test, include this as a technical performance risk affecting schedule in the schedule details and bring to Exec Sum, Watch Items slides if appropriate
- If FFP requires EVMS reporting, focus more on the schedule analysis side and entire Appendix A still required

REMOVE THIS SLIDE IF NOT APPLICABLE

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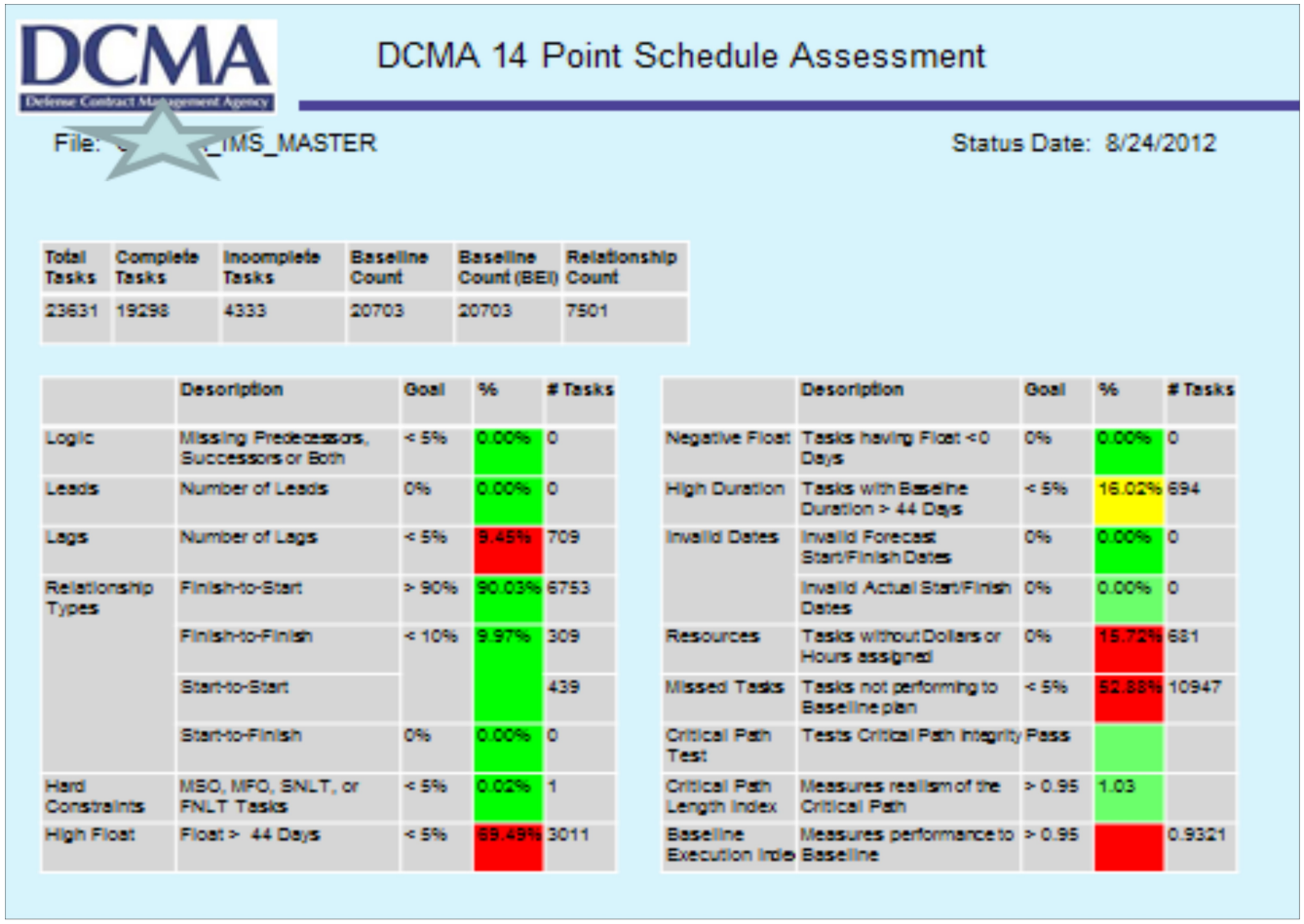
DCMA Schedule Health Metrics



DCMA 14 Point Schedule Assessment

File: [redacted]_IMS_MASTER

Status Date: 8/24/2012

Total Tasks	Complete Tasks	Incomplete Tasks	Baseline Count	Baseline Count (BEI)	Relationship Count
23631	19298	4333	20703	20703	7501

	Description	Goal	%	# Tasks
Logic	Missing Predecessors, Successors or Both	< 5%	0.00%	0
Leads	Number of Leads	0%	0.00%	0
Lags	Number of Lags	< 5%	9.45%	709
Relationship Types	Finish-to-Start	> 90%	90.03%	6753
	Finish-to-Finish	< 10%	9.97%	309
	Start-to-Start			439
	Start-to-Finish	0%	0.00%	0
Hard Constraints	MSO, MFO, SNLT, or FNLT Tasks	< 5%	0.02%	1
High Float	Float > 44 Days	< 5%	69.49%	3011

	Description	Goal	%	# Tasks
Negative Float	Tasks having Float < 0 Days	0%	0.00%	0
High Duration	Tasks with Baseline Duration > 44 Days	< 5%	16.02%	694
Invalid Dates	Invalid Forecast Start/Finish Dates	0%	0.00%	0
	Invalid Actual Start/Finish Dates	0%	0.00%	0
Resources	Tasks without Dollars or Hours assigned	0%	15.72%	681
Missed Tasks	Tasks not performing to Baseline plan	< 5%	52.88%	10947
Critical Path Test	Tests Critical Path Integrity	Pass		
Critical Path Length Index	Measures realism of the Critical Path	> 0.95	1.03	
Baseline Execution Index	Measures performance to Baseline	> 0.95		0.9321

Although the constraints and logic metric are good, the high float metric indicates the network may be unstable and may not be logic driven. This may be the result of missing predecessors and/or successors in the network.

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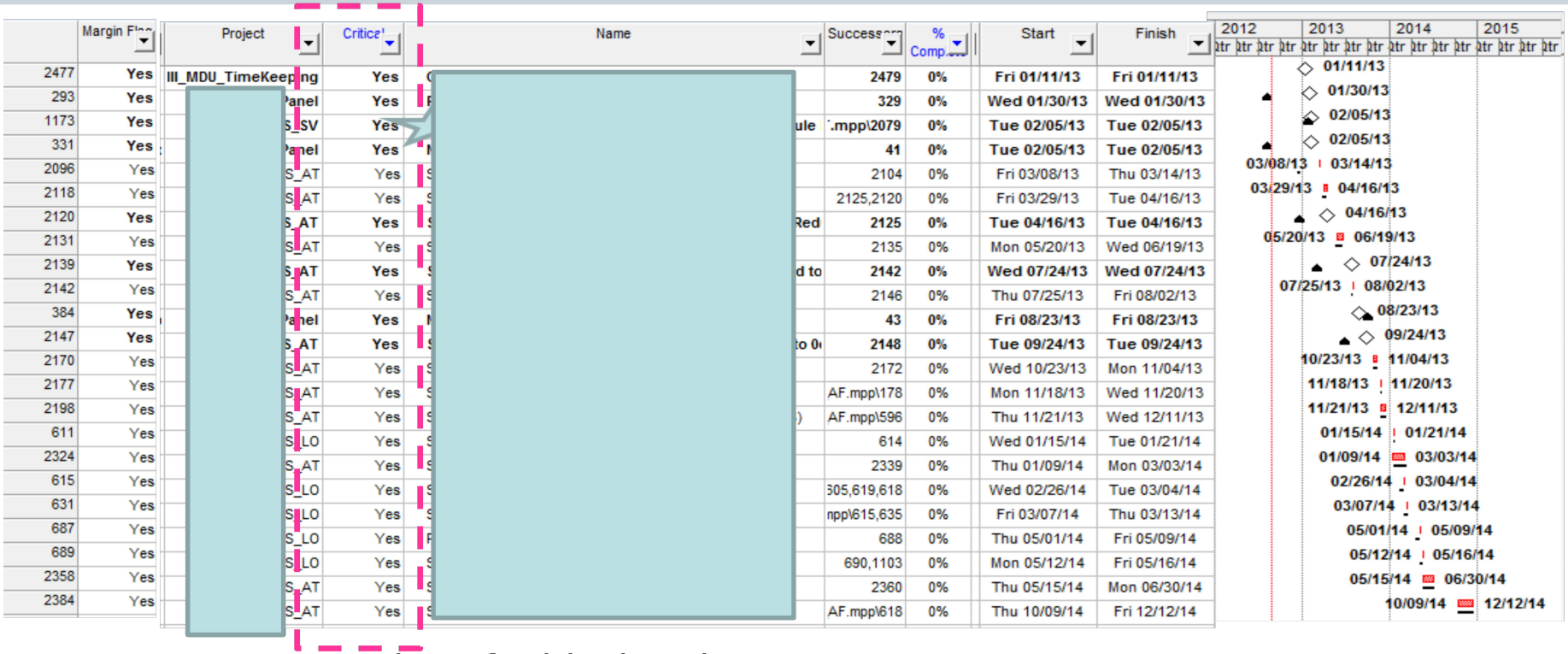
IMS Analysis of Schedule Margin



	Margin Fl	Project	Critical	Name	Successor	% Comp.	Start	Finish
2477	Yes	III_MDU_TimeKeeping	Yes		2479	0%	Fri 01/11/13	Fri 01/11/13
293	Yes		Yes		329	0%	Wed 01/30/13	Wed 01/30/13
1173	Yes		Yes	ule	.mpp\2079	0%	Tue 02/05/13	Tue 02/05/13
331	Yes		Yes		41	0%	Tue 02/05/13	Tue 02/05/13
2096	Yes		Yes		2104	0%	Fri 03/08/13	Thu 03/14/13
2118	Yes		Yes		2125,2120	0%	Fri 03/29/13	Tue 04/16/13
2120	Yes		Yes	Red	2125	0%	Tue 04/16/13	Tue 04/16/13
2131	Yes		Yes		2135	0%	Mon 05/20/13	Wed 06/19/13
2139	Yes		Yes	d to	2142	0%	Wed 07/24/13	Wed 07/24/13
2142	Yes		Yes		2146	0%	Thu 07/25/13	Fri 08/02/13
384	Yes		Yes		43	0%	Fri 08/23/13	Fri 08/23/13
2147	Yes		Yes	to 0	2148	0%	Tue 09/24/13	Tue 09/24/13
2170	Yes		Yes		2172	0%	Wed 10/23/13	Mon 11/04/13
2177	Yes		Yes		AF.mpp\178	0%	Mon 11/18/13	Wed 11/20/13
2198	Yes		Yes	)	AF.mpp\596	0%	Thu 11/21/13	Wed 12/11/13
611	Yes		Yes		614	0%	Wed 01/15/14	Tue 01/21/14
2324	Yes		Yes		2339	0%	Thu 01/09/14	Mon 03/03/14
615	Yes		Yes		305,619,618	0%	Wed 02/26/14	Tue 03/04/14
631	Yes		Yes		npp\615,635	0%	Fri 03/07/14	Thu 03/13/14
687	Yes		Yes		688	0%	Thu 05/01/14	Fri 05/09/14
689	Yes		Yes		690,1103	0%	Mon 05/12/14	Fri 05/16/14
2358	Yes		Yes		2360	0%	Thu 05/15/14	Mon 06/30/14
2384	Yes		Yes		AF.mpp\618	0%	Thu 10/09/14	Fri 12/12/14

Incorrect representation of critical path

- Schedule margin, correctly implemented, should represent a margin of time after completion of all required work towards achieving an end product or final program milestone
- Schedule margin should not be driving critical path, have discrete successors, or show up on the critical path
- Thus, the above screen shot indicates inappropriate use of schedule margin as a driving task within the critical path, calling into question the validity of the entire critical path

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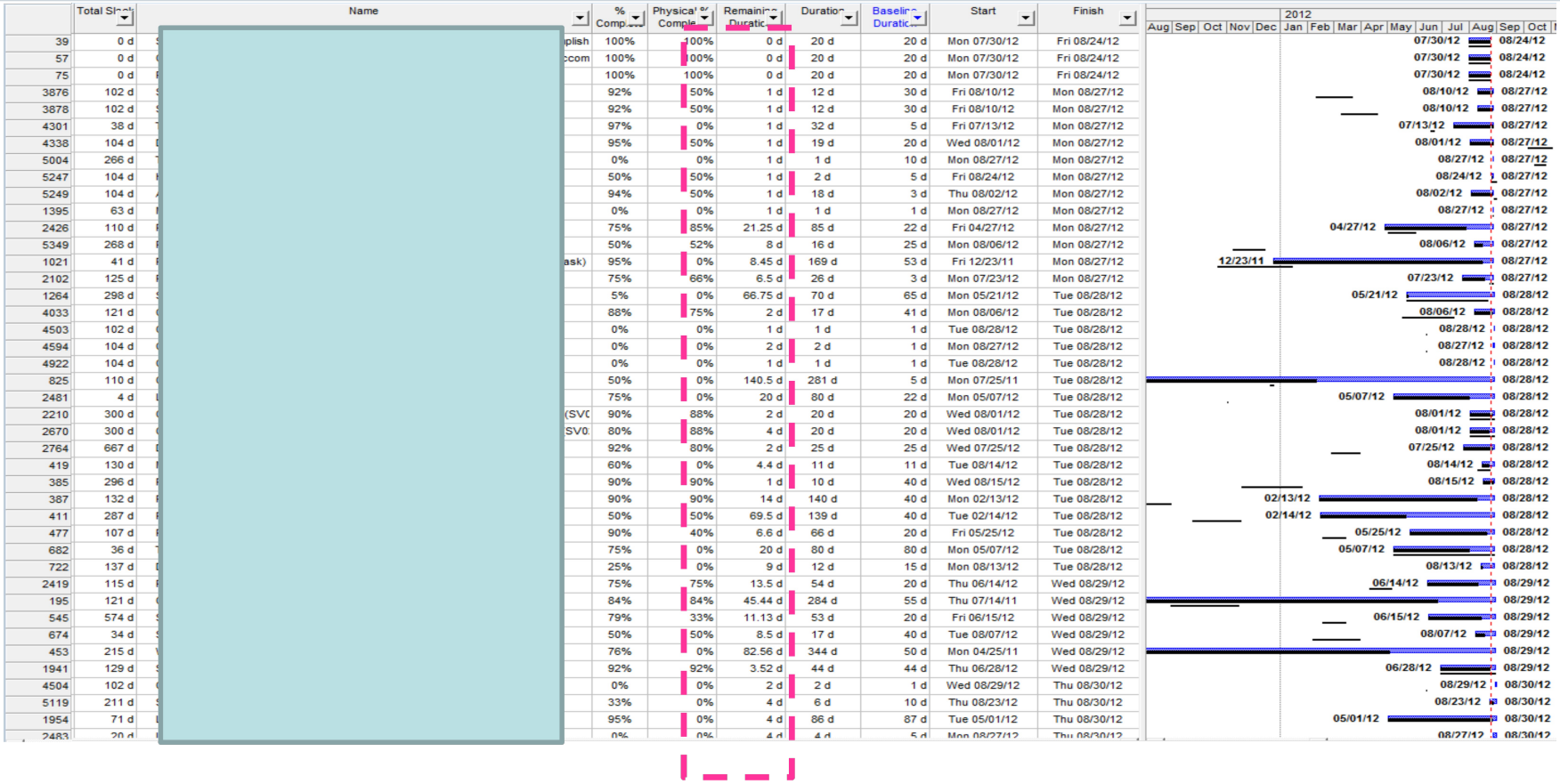
IMS Analysis of Incorrect Progress

DEFENSE CONTRACT MANAGEMENT AGENCY



	Total Slack	Name	% Comp.	Physical % Comple	Remaining Duratic	Duration	Baseline Duratic	Start	Finish
39	0 d		100%	100%	0 d	20 d	20 d	Mon 07/30/12	Fri 08/24/12
57	0 d		100%	100%	0 d	20 d	20 d	Mon 07/30/12	Fri 08/24/12
75	0 d		100%	100%	0 d	20 d	20 d	Mon 07/30/12	Fri 08/24/12
3876	102 d		92%	50%	1 d	12 d	30 d	Fri 08/10/12	Mon 08/27/12
3878	102 d		92%	50%	1 d	12 d	30 d	Fri 08/10/12	Mon 08/27/12
4301	38 d		97%	0%	1 d	32 d	5 d	Fri 07/13/12	Mon 08/27/12
4338	104 d		95%	50%	1 d	19 d	20 d	Wed 08/01/12	Mon 08/27/12
5004	266 d		0%	0%	1 d	1 d	10 d	Mon 08/27/12	Mon 08/27/12
5247	104 d		50%	50%	1 d	2 d	5 d	Fri 08/24/12	Mon 08/27/12
5249	104 d		94%	50%	1 d	18 d	3 d	Thu 08/02/12	Mon 08/27/12
1395	63 d		0%	0%	1 d	1 d	1 d	Mon 08/27/12	Mon 08/27/12
2426	110 d		75%	85%	21.25 d	85 d	22 d	Fri 04/27/12	Mon 08/27/12
5349	268 d		50%	52%	8 d	16 d	25 d	Mon 08/06/12	Mon 08/27/12
1021	41 d		95%	0%	8.45 d	169 d	53 d	Fri 12/23/11	Mon 08/27/12
2102	125 d		75%	66%	6.5 d	26 d	3 d	Mon 07/23/12	Mon 08/27/12
1264	298 d		5%	0%	66.75 d	70 d	65 d	Mon 05/21/12	Tue 08/28/12
4033	121 d		88%	75%	2 d	17 d	41 d	Mon 08/06/12	Tue 08/28/12
4503	102 d		0%	0%	1 d	1 d	1 d	Tue 08/28/12	Tue 08/28/12
4594	104 d		0%	0%	2 d	2 d	1 d	Mon 08/27/12	Tue 08/28/12
4922	104 d		0%	0%	1 d	1 d	1 d	Tue 08/28/12	Tue 08/28/12
825	110 d		50%	0%	140.5 d	281 d	5 d	Mon 07/25/11	Tue 08/28/12
2481	4 d		75%	0%	20 d	80 d	22 d	Mon 05/07/12	Tue 08/28/12
2210	300 d		90%	88%	2 d	20 d	20 d	Wed 08/01/12	Tue 08/28/12
2670	300 d		80%	88%	4 d	20 d	20 d	Wed 08/01/12	Tue 08/28/12
2764	667 d		92%	80%	2 d	25 d	25 d	Wed 07/25/12	Tue 08/28/12
419	130 d		60%	0%	4.4 d	11 d	11 d	Tue 08/14/12	Tue 08/28/12
385	296 d		90%	90%	1 d	10 d	40 d	Wed 08/15/12	Tue 08/28/12
387	132 d		90%	90%	14 d	140 d	40 d	Mon 02/13/12	Tue 08/28/12
411	287 d		50%	50%	69.5 d	139 d	40 d	Tue 02/14/12	Tue 08/28/12
477	107 d		90%	40%	6.6 d	66 d	20 d	Fri 05/25/12	Tue 08/28/12
682	36 d		75%	0%	20 d	80 d	80 d	Mon 05/07/12	Tue 08/28/12
722	137 d		25%	0%	9 d	12 d	15 d	Mon 08/13/12	Tue 08/28/12
2419	115 d		75%	75%	13.5 d	54 d	20 d	Thu 06/14/12	Wed 08/29/12
195	121 d		84%	84%	45.44 d	284 d	55 d	Thu 07/14/11	Wed 08/29/12
545	574 d		79%	33%	11.13 d	53 d	20 d	Fri 06/15/12	Wed 08/29/12
674	34 d		50%	50%	8.5 d	17 d	40 d	Tue 08/07/12	Wed 08/29/12
453	215 d		76%	0%	82.56 d	344 d	50 d	Mon 04/25/11	Wed 08/29/12
1941	129 d		92%	92%	3.52 d	44 d	44 d	Thu 06/28/12	Wed 08/29/12
4504	102 d		0%	0%	2 d	2 d	1 d	Wed 08/29/12	Thu 08/30/12
5119	211 d		33%	0%	4 d	6 d	10 d	Thu 08/23/12	Thu 08/30/12
1954	71 d		95%	0%	4 d	86 d	87 d	Tue 05/01/12	Thu 08/30/12
2483	20 d		0%	0%	4 d	4 d	5 d	Mon 08/27/12	Thu 08/30/12

Incorrectly representing progress status, misleading, incorrect critical path calculations

- All tasks not progressed up to “time now”
- Incorrect calculations of remaining duration
- Not complying with terms and conditions of requirement on contract

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